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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/048,234 | 09/11/2003 | Par Gellerfors | GELLERFORS2 | 4358 |

1444 7590 10/20/2006

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| EXAMINER | |
|---|---|
| SCHNIZER, RICHARD A | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1635 | |

DATE MAILED: 10/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/048,234 | GELLERFORS ET AL. | |
| | Examiner | Art Unit | |
| | Richard Schnizer, Ph. D. | 1635 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *18 September 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) *9-11* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1-8 and 12-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 January 2002* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

An amendment was received on 9/18/06. Applicant's election without traverse of group 1 is acknowledged. Claims 9-11 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Claims 1-17 are pending.

Claims 1-8 and 12-17 are under consideration in this Office Action.

### *Compliance with Sequence Rules*

This application contains sequence disclosures that are encompassed by the definitions for nucleotide and/or amino acid sequences set forth in 37 CFR 1.821(a)(1) and (a)(2). However, this application fails to comply with the requirements of 37 CFR 1.821 through 1.825 for the following reason(s). Applicant's attention is directed to the final rule making notice published at 55 FR 18230 (May 1, 1990), and 1114 OG 29 (May 15, 1990). If the effective filing date is on or after July 1, 1998, see the final rulemaking notice published at 63 FR 29620 (June 1, 1998) and 1211 OG 82 (June 23, 1998). Figure 36 is objected to because it contains nucleic acid sequences, but neither the Figure nor the brief description contains any SEQ ID NO: associated with the sequences.

If these sequences are listed in the current Sequence Listing, then the specification should be amended to include the appropriate SEQ ID NO in each of the passages referred to above. If these sequences are not in the current Sequence Listing, then Applicant must provide:

A substitute computer readable form (CRF) copy of the "Sequence Listing".

A substitute paper copy of the "Sequence Listing", as well as an amendment directing its entry into the specification.

A statement that the content of the paper and computer readable copies are the same and, where applicable, include no new matter, as required by 37 C.F.R. 1.821(e) or 1.821(f) or 1.821(g) or 1.825(b) or 1.825(d).

***Specification/Drawings***

The specification and/or drawings are objected to because the brief description of the drawings does not accurately correspond to the drawings. The brief description refers to Figures 37 A and B, but there are no such Figures in the Application. Further, there are descriptions for 52 Figures, but the application only contains 49 drawing sheets, the last 11 of which have had their Fig. Nos. lined through with no replacement Fig. Nos.

***Claim Objections***

Claim 1 is objected to because it recites acronyms without first defining the acronyms. Claim 1 should be amended to replace "rhPBGD" with "recombinant human porphobilinogen deaminase (rhPBGD)", and to replace "PBGD" with "porphobilinogen deaminase (PBGD)". Claim 1 would be clearer if at least some of the steps required to perform the homologous recombination were set forth, for example:

Claim 1 is also objected to because it recites "A production strain" even though it is directed to one specific strain (Accession No 12915). Substitution of "the" for "an" is suggested.

Claim 7 is objected to for a similar reason. It is drawn to a single, specific expression plasmid, and so it should recite "The expression plasmid", and not "An expression plasmid".

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is indefinite because it is unclear to what the "Accession No" refers. "Deutsche Sammlung von Mikroorganism und Zelulturnen (DSMZ)" should be inserted immediately before "Accession No."

Claims 2-6 are indefinite because they recite "the transformed host cell" without antecedent basis. Note also that there is no step for transfecting the host cell with the vector, and the PBGD encoded by the vector is not limited to human PBDG. As a result the claims are incomplete because they omit essential elements and steps, such omission amounting to a gap between the elements steps. See MPEP § 2172.01.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 2, 4, and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Delfau et al (J. Clin. Invest. 86: 1511-1516, 1990).

Delfau taught a method of purifying rhPBGD expressed in E. coli. Expression vectors encoding "normal" or either of two variants of human PBGD were transfected into E.coli, the bacteria were grown, harvested, disrupted by sonication, and rhPBGD was separated from E. coli PBGD by ion exchange chromotography. See abstract, and page 1513, column 1, second full paragraph. Activity was measured as a function of pH. See Table II on page 1515.

Claim 6 is included in this rejection because although Delfau does not disclose the precise sequence of the normal PBGD, the fact that it is labeled as "normal" conveys to one of skill in the art that it is wild type PBGD. Absent evidence to the contrary the PBGD encoded by SEQ ID NOS: 3 and 4 is wild type PBGD. Where, as here, the claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes, the PTO can require an Applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product. See In re Ludtke, 441 F.2d 660, 169 USPQ 563 (CCPA 1971). Whether the rejection is based on "inherency" under 35 USC 102, on

"prima facie obviousness" under 35 USC 103, jointly or alternatively, the burden of proof is the same, and its fairness is evidenced by the PTO's inability to manufacture products or to obtain and compare prior art products. In re Best, Bolton, and Shaw, 195 USPQ 430, 433 (CCPA 1977) citing In re Brown, 59 CCPA 1036, 459 F.2d 531, 173 USPQ 685 (1972).

Claims 2, 4, and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Chen et al (J. Clin. Invest. 94: 1927-1937, 1994).

Chen taught a method of expressing rhPBGD in E. coli. Expression vectors encoding "normal" or either mutant human PBGD were transfected into E.coli, the bacteria were grown, harvested, and cell extracts were isolated. Isolation of cell extracts is considered to be a purification step. See abstract, and page 1929, column 2, first full paragraph and Table II at page 1933.

Claim 6 is included in this rejection because although Chen does not disclose the precise sequence of the normal PBGD, the fact that it is labeled as "normal" conveys to one of skill in the art that it is wild type PBGD. Absent evidence to the contrary the PBGD encoded by SEQ ID NOS: 3 and 4 is wild type PBGD. Where, as here, the claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes, the PTO can require an Applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product, as discussed above.

Claims 2, 4, and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Ong et al (Mol. Cell. Probes 11: 293-296: 1997).

Ong taught a method of expressing rhPBGD in E. coli. Expression vectors encoding "normal" or either mutant human PBGD were transfected into E.coli, the bacteria were grown, harvested, and enzyme isolated was isolated for assay. See abstract; last paragraph on page 294; Table 1 on page 295; and first full paragraph of column 2 on page 295.

Claim 6 is included in this rejection because although Ong does not disclose the precise sequence of the normal PBGD, the fact that it is labeled as "normal" conveys to one of skill in the art that it is wild type PBGD. Absent evidence to the contrary the PBGD encoded by SEQ ID NOS: 3 and 4 is wild type PBGD. Where, as here, the claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes, the PTO can require an Applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product, as discussed above.

Claim 12 is rejected under 35 U.S.C. 102(b) as being anticipated by Scott et al (FEBS Lett. 242(2): 319-324, 1989.

Scott taught a hemB$^-$ E. coli strain that produced PBGD apoenzyme. Porphobilinogen deaminase is an enzyme that catalyses the polymerization of porphobilinogen (PBG) to form preurophorphobilinogen (hydroxymethylbilane). The

enzyme comprises a prosthetic group composed of a PBG attached to a cysteine at position 242, and a second PBG attached to the first PBG. The catalyzed reaction involves the stepwise, linear addition of 4 more PBGs, and subsequent cyclization and release of preurophorphobilinogen. This results in regeneration of the enzyme. The hemB$^-$ E. coli strain of Scott fails to produce PBG, but does produce PBGD apoenzyme. Because the strain does not produce PBG, the PBGD apoenzyme cannot obtain the PBG prosthetic group required for activity, so the bacterial strain does not produce an active PBGD. See abstract; the last two sentences of the paragraph bridging columns 1 and 2 on page 319; and lines 1-11 of item 3 on page 321. Thus Scott anticipates the claim.

Claim 12 is rejected under 35 U.S.C. 102(b) as being anticipated by Fraser et al (Science 270: 397-403, 1995).

Fraser et al taught the entire genome of bacterium Mycoplasma genitalium. Absent evidence to the contrary, this bacterium lacks any gene encoding PGBD. The only gene related to heme and porphyrin metabolism contained by Mycoplasma genitalium is a gene encoding protoporphyrinogen oxidase. See Table 1, at page 399, column 1, under "Biosynthesis of cofactors, prosthetic groups, and carriers". Mycoplasma genitalium is considered to be genetically modified because it is a product of evolution.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2, 3, and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al (J. Clin. Invest. 94: 1927-1937, 1994) in view of Makrides et al (Micro. Rev. 60(3): 512-538, 1996).

Chen taught a method of expressing rhPBGD in E. coli. Expression vectors encoding "normal" or either mutant human PBGD were transfected into E.coli, the bacteria were grown, harvested, and cell extracts were isolated. Isolation of cell extracts is considered to be a purification step. See abstract, and page 1929, column 2, first full paragraph and Table II at page 1933.

Chen did not teach a fermentation step or the use of a His Tag purification tag.

Makrides described strategies for achieving high expression of genes in E. coli and improved methods for isolation of the proteins. Makrides states that protein "production in E. coli can be increased significantly through the use of high density culture systems", i.e. fermentation systems. See paragraph bridging pages 525 and 526. Makrides also describes the use of fusion proteins including His-Tag proteins (see Table III). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a fermentation step in the method of Chen because Makrides indicated that one could increase protein production through the use of fermentation. It would

have been similarly obvious to use a His Tag to aid in the purification of he rhPBGD. One would have been motivated to do so in order to easily separate the rhPBGD from any contaminating bacterial PBGD so as to obtain accurate activity measurements. Thus the invention as a whole was prima facie obvious.

***Double Patenting***

A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

Claims 1, 7, and 8 are rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 3, 1, and 2, respectively, of prior U.S. Patent No. 6,537,777. This is a double patenting rejection.

Claim 3 of '777 is:

> The rhPBGD production strain (DSM Accession No. 12915) obtained by use of the DNA fragment, Eco RI-Hind III linear fragment as shown in Seq. ID NO 2 to obtain hemC-deletion in the host JM105-H-R6-C by homologous gene replacement and transforming the resulting strain with the expression plasmid pExp1-M2-Bb to yield the final production strain which is free from production of PBGD of non human origin.

As such it is coextensive in scope with instant claim 1.

Claim 1 of '777 is:

> The expression plasmid pExp1-M2-BB as shown in Seq. ID NO 1.

SEQ ID NO:1 from '777 is identical to instant SEQ ID NO:1 so '777 claim 1 is coextensive in scope with instant claim 7.

Claim 2 of '777 is:

The DNA fragment of Seq. ID NO 2, capable of obtaining hemC-deletion in a host.

SEQ ID NO:2 of '777 is identical to instant SEQ ID NO:2, so '777 claim 2 is coextensive in scope with instant claim 8.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 2-6, and 12-17 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 3-13 of U.S. Patent No. 6,537,777. Although the conflicting claims are not identical, they are not patentably distinct from each other.

Instant claims 2-6 embrace methods of producing rhPBGD by providing a vector encoding a PBGD, culturing a transformed host cell under conditions facilitating expression of the nucleic acid sequence, and recovering the expression product from the culture. Claim 3 adds a fermentation step. Claim 4 requires a purification step. Claim 5 that purification is performed with a His-Tag and the expression product is a fusion protein (rhPBGD-His) comprising a human PBGD and a His-Tag. Claim 6 requires that eh rhPBGD is encoded by SEQ ID NO:3 or 4. Claim 14 is drawn to methods of producing rhPBGD comprising cultivating a cell that does not produce PBGD of non-human origin, and that does produce rhPBGD.

Claims 4-13 of '777 are drawn to a method of producing a protein comprising a sequence selected from SEQ ID NOS: 3-11, comprising a) providing a transformed host cell transformed with a recombinant DNA molecule encoding a human PBGD selected from SEQ ID NOS: 3-11; b) culturing the transformed host cell under conditions facilitating expression of the nucleic acid sequence; and c) recovering the expression product. Claim 5 requires a fermentation step. Claim 6 requires a further purification step. Claim 7 requires that purification is performed with a His-Tag and the expression product is a fusion protein (rhPBGD-His) comprising a human PBGD and a His-Tag. Claim 8 limits the rhPBGD to SEQ ID NO:3. Claims 10 and 11 require that the transformed cell does not express non-human PBGD.

Note that instant SEQ ID NOS: 3 and 4 are identical to SEQ ID NOS: 3 and 4 from '777. See alignments below. For these reasons, the claims of '777 are considered to anticipate and render obvious claims 2-6 and 14 of '777. Note that this is an

obviousness type double patenting rejection due to the indefiniteness of instant claims 2-6. Should claim 2 be amended to require that the recited host cell is transformed with the recited vector, then a statutory double patenting rejection will be required for dependent claim 6 because its entire scope will be clearly anticipated by claim 4 of the '777 patent.

Instant claims 12 and 13 are anticipated and rendered obvious by at least '777 claim 1.

Instant claims 14-17 are drawn to methods of obtaining a bacterial cell of instant claim 12 with an expression vector comprising an expressible nucleic acid sequence encoding recombinant human PBGD.

Claim 3 of '777 is:

> The rhPBGD production strain (DSM Accession No. 12915) obtained by use of the DNA fragment, Eco RI-Hind III linear fragment as shown in Seq. ID NO 2 to obtain hemC-deletion in the host JM105-H-R6-C by homologous gene replacement and transforming the resulting strain with the expression plasmid pExp1-M2-Bb to yield the final production strain which is free from production of PBGD of non human origin.

Because '777 claim 3 states precisely how to make the claimed bacterium, it renders obvious instant claims 14-17.

***Conclusion***

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner(s) should be directed to Richard Schnizer, whose telephone number is 571-272-0762. The examiner can normally be reached Monday through Friday between the

hours of 6:00 AM and 3:30. The examiner is off on alternate Fridays, but is sometimes in the office anyway.

If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Peter Paras, can be reached at (571) 272-4517. The official central fax number is 571-273-8300. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.

Richard Schnizer, Ph.D.
Primary Examiner
Art Unit 1635

**Alignment of SEQ ID NO:1 from '777 with instant SEQ ID NO:1:**

```
Query  1    GAATTCTAACATAAGTTAAGGAGGAAAAAAAAATGAGAGTTATTCGTGTCGGTACCCGCA  60
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  1    GAATTCTAACATAAGTTAAGGAGGAAAAAAAAATGAGAGTTATTCGTGTCGGTACCCGCA  60

Query  61   AGAGCCAGCTTGCTCGCATACAGACGGACAGTGTGGTGGCAACATTGAAAGCCTCGTACC  120
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  61   AGAGCCAGCTTGCTCGCATACAGACGGACAGTGTGGTGGCAACATTGAAAGCCTCGTACC  120

Query  121  CTGGCCTGCAGTTTGAAATCATTGCTATGTCCACCACAGGGGACAAGATTCTTGATACTG  180
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  121  CTGGCCTGCAGTTTGAAATCATTGCTATGTCCACCACAGGGGACAAGATTCTTGATACTG  180

Query  181  CACTCTCTAAGATTGGAGAGAAAAGCCTGTTTACCAAGGAGCTTGAACATGCCCTGGAGA  240
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  181  CACTCTCTAAGATTGGAGAGAAAAGCCTGTTTACCAAGGAGCTTGAACATGCCCTGGAGA  240

Query  241  AGAATGAAGTGGACCTGGTTGTTCACTCCTTGAAGGACCTGCCCACTGTGCTTCCTCCTG  300
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  241  AGAATGAAGTGGACCTGGTTGTTCACTCCTTGAAGGACCTGCCCACTGTGCTTCCTCCTG  300

Query  301  GCTTCACCATCGGAGCCATCTGCAAGCGGGAAAACCCTCATGATGCTGTTGTCTTTCACC  360
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  301  GCTTCACCATCGGAGCCATCTGCAAGCGGGAAAACCCTCATGATGCTGTTGTCTTTCACC  360

Query  361  CAAAATTTGTTGGGAAGACCCTAGAAACCCTGCCAGAGAAGAGTGTGGTGGGAACCAGCT  420
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  361  CAAAATTTGTTGGGAAGACCCTAGAAACCCTGCCAGAGAAGAGTGTGGTGGGAACCAGCT  420

Query  421  CCCTGCGAAGAGCAGCCCAGCTGCAGAGAAAGTTCCCGCATCTGGAGTTCAGGAGTATTC  480
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  421  CCCTGCGAAGAGCAGCCCAGCTGCAGAGAAAGTTCCCGCATCTGGAGTTCAGGAGTATTC  480

Query  481  GGGGAAACCTCAACACCCGGCTTCGGAAGCTGGACGAGCAGCAGGAGTTCAGTGCCATCA  540
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  481  GGGGAAACCTCAACACCCGGCTTCGGAAGCTGGACGAGCAGCAGGAGTTCAGTGCCATCA  540

Query  541  TCCTGGCAACAGCTGGCCTGCAGCGCATGGGCTGGCACAACCGGGTTGGGCAGATCCTGC  600
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  541  TCCTGGCAACAGCTGGCCTGCAGCGCATGGGCTGGCACAACCGGGTTGGGCAGATCCTGC  600

Query  601  ACCCTGAGGAATGCATGTATGCTGTGGGCCAGGGGGCCTTGGGCGTGGAAGTGCGAGCCA  660
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  601  ACCCTGAGGAATGCATGTATGCTGTGGGCCAGGGGGCCTTGGGCGTGGAAGTGCGAGCCA  660

Query  661  AGGACCAGGACATCTTGGATCTGGTGGGTGTGCTGCACGATCCCGAGACTCTGCTTCGCT  720
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  661  AGGACCAGGACATCTTGGATCTGGTGGGTGTGCTGCACGATCCCGAGACTCTGCTTCGCT  720

Query  721  GCATCGCTGAAAGGGCCTTCCTGAGGCACCTGGAAGGAGGCTGCAGTGTGCCAGTAGCCG  780
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  721  GCATCGCTGAAAGGGCCTTCCTGAGGCACCTGGAAGGAGGCTGCAGTGTGCCAGTAGCCG  780
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Query  781   TGCATACAGCTATGAAGGATGGGCAACTGTACCTGACTGGAGGAGTCTGGAGTCTAGACG  840
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  781   TGCATACAGCTATGAAGGATGGGCAACTGTACCTGACTGGAGGAGTCTGGAGTCTAGACG  840

Query  841   GCTCAGATAGCATACAAGAGACCATGCAGGCTACCATCCATGTCCCTGCCCAGCATGAAG  900
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  841   GCTCAGATAGCATACAAGAGACCATGCAGGCTACCATCCATGTCCCTGCCCAGCATGAAG  900

Query  901   ATGGCCCTGAGGATGACCCACAGTTGGTAGGCATCACTGCTCGTAACATTCCACGAGGGC  960
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  901   ATGGCCCTGAGGATGACCCACAGTTGGTAGGCATCACTGCTCGTAACATTCCACGAGGGC  960

Query  961   CCCAGTTGGCTGCCCAGAACTTGGGCATCAGCCTGGCCAACTTGTTGCTGAGCAAAGGAG  1020
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Sbjct  961   CCCAGTTGGCTGCCCAGAACTTGGGCATCAGCCTGGCCAACTTGTTGCTGAGCAAAGGAG  1020

Query  1021  CCAAAAACATCCTGGATGTTGCACGGCAATTGAACGATGCCCATTAATAAGCTTGGCTGT  1080
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Sbjct  1021  CCAAAAACATCCTGGATGTTGCACGGCAATTGAACGATGCCCATTAATAAGCTTGGCTGT  1080

Query  1081  TTTGGCGGATGAGAGAAGATTTTCAGCCTGATACAGATTAAATCAGAACGCAGAAGCGGT  1140
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  1081  TTTGGCGGATGAGAGAAGATTTTCAGCCTGATACAGATTAAATCAGAACGCAGAAGCGGT  1140

Query  1141  CTGATAAAACAGAATTTGCCTGGCGGCAGTAGCGCGGTGGTCCCACCTGACCCCATGCCG  1200
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Sbjct  1141  CTGATAAAACAGAATTTGCCTGGCGGCAGTAGCGCGGTGGTCCCACCTGACCCCATGCCG  1200

Query  1201  AACTCAGAAGTGAAACGCCGTAGCGCCGATGGTAGTGTGGGGTCTCCCCATGCGAGAGTA  1260
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Sbjct  1201  AACTCAGAAGTGAAACGCCGTAGCGCCGATGGTAGTGTGGGGTCTCCCCATGCGAGAGTA  1260

Query  1261  GGGAACTGCCAGGCATCAAATAAAACGAAAGGCTCAGTCGAAAGACTGGGCCTTTCGTTT  1320
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Sbjct  1261  GGGAACTGCCAGGCATCAAATAAAACGAAAGGCTCAGTCGAAAGACTGGGCCTTTCGTTT  1320

Query  1321  TATCTGTTGTTTGTCGGTGAACGCTCTCCTGAGTAGGACAAATCCGCCGGGAGCGGATTT  1380
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Sbjct  1321  TATCTGTTGTTTGTCGGTGAACGCTCTCCTGAGTAGGACAAATCCGCCGGGAGCGGATTT  1380

Query  1381  GAACGTTGCGAAGCAACGGCCCGGAGGGTGGCGGGCAGGACGCCCGCCATAAACTGCCAG  1440
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Sbjct  1381  GAACGTTGCGAAGCAACGGCCCGGAGGGTGGCGGGCAGGACGCCCGCCATAAACTGCCAG  1440

Query  1441  GCATCAAATTAAGCAGAAGGCCATCCTGACGGATGGCCTTTTTGCGTTTCTACAAACTCT  1500
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Sbjct  1441  GCATCAAATTAAGCAGAAGGCCATCCTGACGGATGGCCTTTTTGCGTTTCTACAAACTCT  1500

Query  1501  TTTGTTTATTTTTCTAAATACATTCAAATATGTATCCGCTCATGAGACAATAACCCTGAT  1560
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Sbjct  1501  TTTGTTTATTTTTCTAAATACATTCAAATATGTATCCGCTCATGAGACAATAACCCTGAT  1560

Query  1561  AAATGCTTCAATAATATTGAAAAAGGAAGAGTATGAGTATTCAACATTTCCGTGTCGCCC  1620
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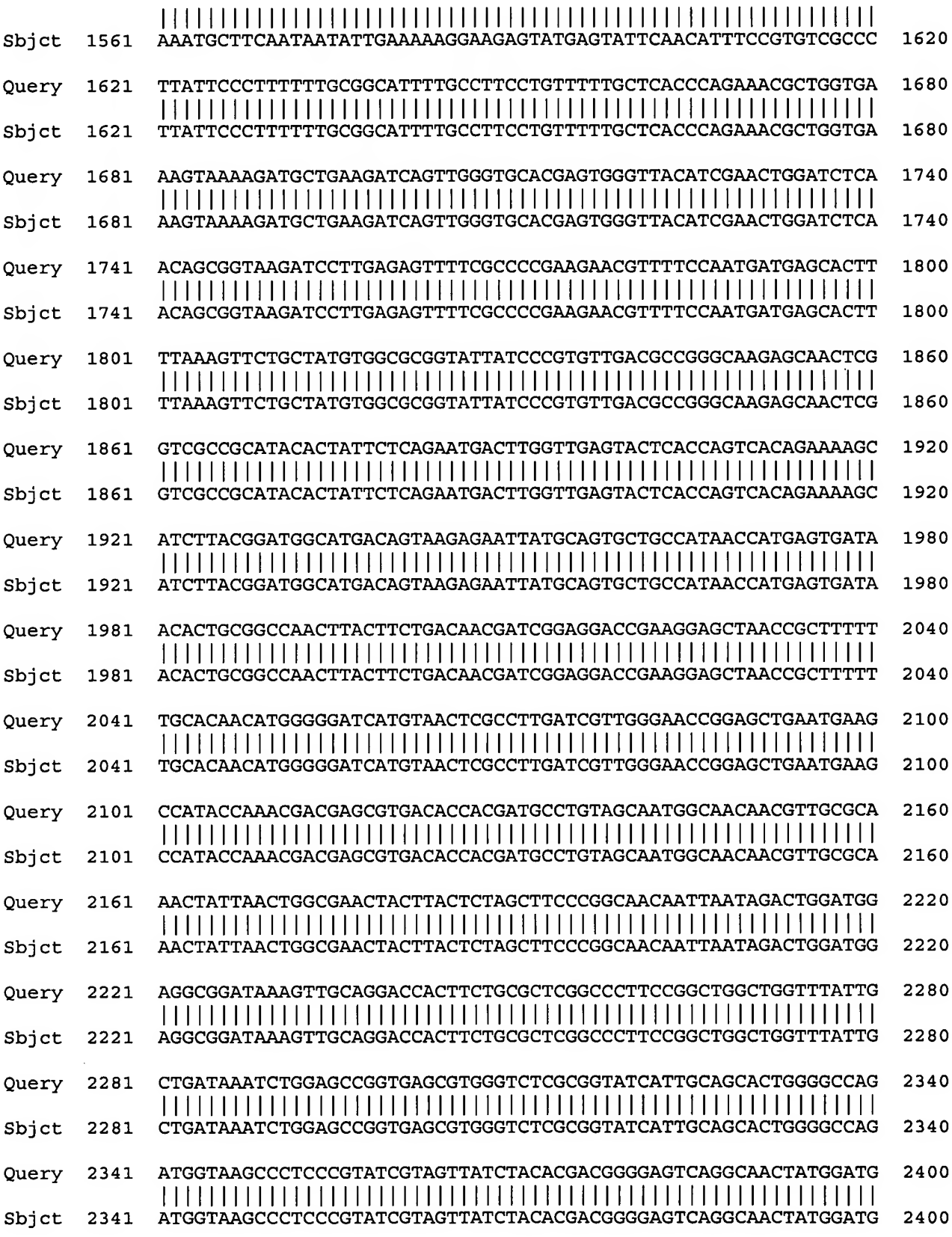

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Query  2401  AACGAAATAGACAGATCGCTGAGATAGGTGCCTCACTGATTAAGCATTGGTAACTGTCAG  2460
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Sbjct  2401  AACGAAATAGACAGATCGCTGAGATAGGTGCCTCACTGATTAAGCATTGGTAACTGTCAG  2460

Query  2461  ACCAAGTTTACTCATATATACTTTAGATTGATTTAAAACTTCATTTTTAATTTAAAAGGA  2520
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Sbjct  2461  ACCAAGTTTACTCATATATACTTTAGATTGATTTAAAACTTCATTTTTAATTTAAAAGGA  2520

Query  2521  TCTAGGTGAAGATCCTTTTTGATAATCTCATGACCAAAATCCCTTAACGTGAGTTTTCGT  2580
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Sbjct  2521  TCTAGGTGAAGATCCTTTTTGATAATCTCATGACCAAAATCCCTTAACGTGAGTTTTCGT  2580

Query  2581  TCCACTGAGCGTCAGACCCCGTAGAAAAGATCAAAGGATCTTCTTGAGATCCnnnnnnnC  2640
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Sbjct  2581  TCCACTGAGCGTCAGACCCCGTAGAAAAGATCAAAGGATCTTCTTGAGATCCTTTTTTTC  2640

Query  2641  TGCGCGTAATCTGCTGCTTGCAAACAAAAAAACCACCGCTACCAGCGGTGGTTTGTTTGC  2700
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Sbjct  2641  TGCGCGTAATCTGCTGCTTGCAAACAAAAAAACCACCGCTACCAGCGGTGGTTTGTTTGC  2700

Query  2701  CGGATCAAGAGCTACCAACTCTTTTTCCGAAGGTAACTGGCTTCAGCAGAGCGCAGATAC  2760
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Sbjct  2701  CGGATCAAGAGCTACCAACTCTTTTTCCGAAGGTAACTGGCTTCAGCAGAGCGCAGATAC  2760

Query  2761  CAAATACTGTCCTTCTAGTGTAGCCGTAGTTAGGCCACCACTTCAAGAACTCTGTAGCAC  2820
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Sbjct  2761  CAAATACTGTCCTTCTAGTGTAGCCGTAGTTAGGCCACCACTTCAAGAACTCTGTAGCAC  2820

Query  2821  CGCCTACATACCTCGCTCTGCTAATCCTGTTACCAGTGGCTGCTGCCAGTGGCGATAAGT  2880
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Query  2881  CGTGTCTTACCGGGTTGGACTCAAGACGATAGTTACCGGATAAGGCGCAGCGGTCGGGCT  2940
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Sbjct  2881  CGTGTCTTACCGGGTTGGACTCAAGACGATAGTTACCGGATAAGGCGCAGCGGTCGGGCT  2940

Query  2941  GAACGGGGGGTTCGTGCACACAGCCCAGCTTGGAGCGAACGACCTACACCGAACTGAGAT  3000
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Sbjct  2941  GAACGGGGGGTTCGTGCACACAGCCCAGCTTGGAGCGAACGACCTACACCGAACTGAGAT  3000

Query  3001  ACCTACAGCGTGAGCTATGAGAAAGCGCCACGCTTCCCGAAGGGAGAAAGGCGGACAGGT  3060
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Sbjct  3001  ACCTACAGCGTGAGCTATGAGAAAGCGCCACGCTTCCCGAAGGGAGAAAGGCGGACAGGT  3060

Query  3061  ATCCGGTAAGCGGCAGGGTCGGAACAGGAGAGCGCACGAGGGAGCTTCCAGGGGGAAACG  3120
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Sbjct  3061  ATCCGGTAAGCGGCAGGGTCGGAACAGGAGAGCGCACGAGGGAGCTTCCAGGGGGAAACG  3120

Query  3121  CCTGGTATCTTTATAGTCCTGTCGGGTTTCGCCACCTCTGACTTGAGCGTCGATTTTTGT  3180
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Sbjct  3121  CCTGGTATCTTTATAGTCCTGTCGGGTTTCGCCACCTCTGACTTGAGCGTCGATTTTTGT  3180

Query  3181  GATGCTCGTCAGGGGGGCGGAGCCTATGGAAAAACGCCAGCAACGCGGCCTTTTTACGGT  3240
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Sbjct  3181  GATGCTCGTCAGGGGGGCGGAGCCTATGGAAAAACGCCAGCAACGCGGCCTTTTTACGGT  3240

Query  3241  TCCTGGCCTTTTGCTGGCCTTTTGCTCACATGTTCTTTCCTGCGTTATCCCCTGATTCTG  3300
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Sbjct  3241  TCCTGGCCTTTTGCTGGCCTTTTGCTCACATGTTCTTTCCTGCGTTATCCCCTGATTCTG  3300

Query  3301  TGGATAACCGTATTACCGCCTTTGAGTGAGCTGATACCGCTCGCCGCAGCCGAACGACCG  3360
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Sbjct  3301  TGGATAACCGTATTACCGCCTTTGAGTGAGCTGATACCGCTCGCCGCAGCCGAACGACCG  3360

Query  3361  AGCGCAGCGAGTCAGTGAGCGAGGAAGCGGAAGAGCGCCTGATGCGGTATTTTCTCCTTA  3420
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Sbjct  3361  AGCGCAGCGAGTCAGTGAGCGAGGAAGCGGAAGAGCGCCTGATGCGGTATTTTCTCCTTA  3420

Query  3421  CGCATCTGTGCGGTATTTCACACCGCATATGGTGCACTCTCAGTACAATCTGCTCTGATG  3480
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Sbjct  3421  CGCATCTGTGCGGTATTTCACACCGCATATGGTGCACTCTCAGTACAATCTGCTCTGATG  3480

Query  3481  CCGCATAGTTAAGCCAGTATACACTCCGCTATCGCTACAGATCCGGAACATAATGGTGCA  3540
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Sbjct  3481  CCGCATAGTTAAGCCAGTATACACTCCGCTATCGCTACAGATCCGGAACATAATGGTGCA  3540

Query  3541  GGGCGCTGACTTCCGCGTTTCCAGACTTTACGAAACACGGAAACCGAAGACCATTCATGT  3600
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Query  3601  TGTTGCTCAGGTCGCAGACGTTTTGCAGCAGCAGTCGCTTCACGTTCGCTCGCGTATCGG  3660
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Sbjct  3601  TGTTGCTCAGGTCGCAGACGTTTTGCAGCAGCAGTCGCTTCACGTTCGCTCGCGTATCGG  3660

Query  3661  TGATTCATTCTGCTAACCAGTAAGGCAACCCCGCCAGCCTAGCCGGGTCCTCAACGACAG  3720
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Sbjct  3661  TGATTCATTCTGCTAACCAGTAAGGCAACCCCGCCAGCCTAGCCGGGTCCTCAACGACAG  3720

Query  3721  GAGCACGATCATGCGCACCCGTGGCCAGGACCCAACGCTGCCCGAGATGCGCCGCGTGCG  3780
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Sbjct  3721  GAGCACGATCATGCGCACCCGTGGCCAGGACCCAACGCTGCCCGAGATGCGCCGCGTGCG  3780

Query  3781  GCTGCTGGAGATGGCGGACGCGATGGATATGTTCTGCCAAGGGTTGGTTTGCGCATTCAC  3840
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Sbjct  3781  GCTGCTGGAGATGGCGGACGCGATGGATATGTTCTGCCAAGGGTTGGTTTGCGCATTCAC  3840

Query  3841  AGTTCTCCGCAAGAATTGATTGGCTCCAATTCTTGGAGTGGTGAATCCGTTAGCGAGGTG  3900
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Sbjct  3841  AGTTCTCCGCAAGAATTGATTGGCTCCAATTCTTGGAGTGGTGAATCCGTTAGCGAGGTG  3900

Query  3901  CCGCCGGCTTCCATTCAGGTCGAGGTGGCCCGGCTCCATGCACCGCGACGCAACGCGGGG  3960
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Sbjct  3901  CCGCCGGCTTCCATTCAGGTCGAGGTGGCCCGGCTCCATGCACCGCGACGCAACGCGGGG  3960

Query  3961  AGGCAGACAAGGTATAGGGCGGCGCCTACAATCCATGCCAACCCGTTCCATGTGCTCGCC  4020
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Query  4021  GAGGCGGCATAAATCGCCGTGACGATCAGCGGTCCAGTGATCGAAGTTAGGCTGGTAAGA  4080
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Query  4081  GCCGCGAGCGATCCTTGAAGCTGTCCCTGATGGTCGTCATCTACCTGCCTGGACAGCATG  4140
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Sbjct  4081  GCCGCGAGCGATCCTTGAAGCTGTCCCTGATGGTCGTCATCTACCTGCCTGGACAGCATG  4140

Query  4141  GCCTGCAACGCGGGCATCCCGATGCCGCCGGAAGCGAGAAGAATCATAATGGGGAAGGCC  4200
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Sbjct  4141  GCCTGCAACGCGGGCATCCCGATGCCGCCGGAAGCGAGAAGAATCATAATGGGGAAGGCC  4200

Query  4201  ATCCAGCCTCGCGTCGCGAACGCCAGCAAGACGTAGCCCAGCGCGTCGGCCGCCATGCCG  4260
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Sbjct  4261  GCGATAATGGCCTGCTTCTCGCCGAAACGTTTGGTGGCGGGACCAGTGACGAAGGCTTGA  4320

Query  4321  GCGAGGGCGTGCAAGATTCCGAATACCGCAAGCGACAGGCCGATCATCGTCGCGCTCCAG  4380
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Sbjct  4441  ATGATAAAGAAGACAGTCATAAGTGCGGCGACGATAGTCATGCCCCGCGCCCACCGGAAG  4500

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Sbjct  4501  GAGCTGACTGGGTTGAAGGCTCTCAAGGGCATCGGTCGACGCTCTCCCTTATGCGACTCC  4560

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Sbjct  4561  TGCATTAGGAAGCAGCCCAGTAGTAGGTTGAGGCCGTTGAGCACCGCCGCCGCAAGGAAT  4620

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Sbjct  4621  GGTGCATGCAAGGAGATGGCGCCCAACAGTCCCCCGGCCACGGGGCCTGCCACCATACCC  4680

Query  4681  ACGCCGAAACAAGCGCTCATGAGCCCGAAGTGGCGAGCCCGATCTTCCCCATCGGTGATG  4740
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Sbjct  4681  ACGCCGAAACAAGCGCTCATGAGCCCGAAGTGGCGAGCCCGATCTTCCCCATCGGTGATG  4740

Query  4741  TCGGCGATATAGGCGCCAGCAACCGCACCTGTGGCGCCGGTGATGCCGGCCACGATGCGT  4800
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Sbjct  4741  TCGGCGATATAGGCGCCAGCAACCGCACCTGTGGCGCCGGTGATGCCGGCCACGATGCGT  4800

Query  4801  CCGGCGTAGAGGATCCACAGGACGGGTGTGGTCGCCATGATCGCGTAGTCGATAGTGGCT  4860
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Query  4861  CCAAGTAGCGAAGCGAGCAGGACTGGGCGGCGGCCAAAGCGGTCGGACAGTGCTCCGAGA  4920
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Query  4921  ACGGGTGCGCATAGAAATTGCATCAACGCATATAGCGCTAGCAGCACGCCATAGTGACTG  4980
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Sbjct  4921  ACGGGTGCGCATAGAAATTGCATCAACGCATATAGCGCTAGCAGCACGCCATAGTGACTG  4980

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Query  5101  TTCATACACGGTGCCTGACTGCGTTAGCAATTTAACTGTGATAAACTACCGCATTAAAGC  5160
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Sbjct  5101  TTCATACACGGTGCCTGACTGCGTTAGCAATTTAACTGTGATAAACTACCGCATTAAAGC  5160

Query  5161  TAATCGATGATAAGCTGTCAAACATGAGTGATCCGGGCTTATCGACTGCACGGTGCACCA  5220
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Sbjct  5161  TAATCGATGATAAGCTGTCAAACATGAGTGATCCGGGCTTATCGACTGCACGGTGCACCA  5220

Query  5221  ATGCTTCTGGCGTCAGGCAGCCATCGGAAGCTGTGGTATGGCTGTGCAGGTCGTAAATCA  5280
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Sbjct  5221  ATGCTTCTGGCGTCAGGCAGCCATCGGAAGCTGTGGTATGGCTGTGCAGGTCGTAAATCA  5280

Query  5281  CTGCATAATTCGTGTCGCTCAAGGCGCACTCCCGTTCTGGATAATGTTTTTTGCGCCGAC  5340
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Query  5341  ATCATAACGGTTCTGGCAAATATTCTGAAATGAGCTGTTGACAATTAATCATCGGCTCGT  5400
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Sbjct  5341  ATCATAACGGTTCTGGCAAATATTCTGAAATGAGCTGTTGACAATTAATCATCGGCTCGT  5400

Query  5401  ATAATGTGTGGAATTGTGAGCGGATAACAATTTCACACAGGAAACA  5446
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**Alignment between SEQ ID NO:3 from '777 and instant SEQ ID NO:3:**

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Query  1    ATGAGAGTGATTCGCGTGGGTACCCGCAAGAGCCAGCTTGCTCGCATACAGACGGACAGT  60
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Sbjct  1    ATGAGAGTGATTCGCGTGGGTACCCGCAAGAGCCAGCTTGCTCGCATACAGACGGACAGT  60

Query  61   GTGGTGGCAACATTGAAAGCCTCGTACCCTGGCCTGCAGTTTGAAATCATTGCTATGTCC  120
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Sbjct  61   GTGGTGGCAACATTGAAAGCCTCGTACCCTGGCCTGCAGTTTGAAATCATTGCTATGTCC  120

Query  121  ACCACAGGGGACAAGATTCTTGATACTGCACTCTCTAAGATTGGAGAGAAAAGCCTGTTT  180
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Sbjct  121  ACCACAGGGGACAAGATTCTTGATACTGCACTCTCTAAGATTGGAGAGAAAAGCCTGTTT  180

Query  181  ACCAAGGAGCTTGAACATGCCCTGGAGAAGAATGAAGTGGACCTGGTTGTTCACTCCTTG  240
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Sbjct  181  ACCAAGGAGCTTGAACATGCCCTGGAGAAGAATGAAGTGGACCTGGTTGTTCACTCCTTG  240

Query  241  AAGGACCTGCCCACTGTGCTTCCTCCTGGCTTCACCATCGGAGCCATCTGCAAGCGGGAA  300
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Sbjct  241  AAGGACCTGCCCACTGTGCTTCCTCCTGGCTTCACCATCGGAGCCATCTGCAAGCGGGAA  300

Query  301  AACCCTCATGATGCTGTTGTCTTTCACCCAAAATTTGTTGGGAAGACCCTAGAAACCCTG  360
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Sbjct  301  AACCCTCATGATGCTGTTGTCTTTCACCCAAAATTTGTTGGGAAGACCCTAGAAACCCTG  360

Query  361  CCAGAGAAGAGTGTGGTGGGAACCAGCTCCCTGCGAAGAGCAGCCCAGCTGCAGAGAAAG  420
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Sbjct  361  CCAGAGAAGAGTGTGGTGGGAACCAGCTCCCTGCGAAGAGCAGCCCAGCTGCAGAGAAAG  420

Query  421  TTCCCGCATCTGGAGTTCAGGAGTATTCGGGGAAACCTCAACACCCGGCTTCGGAAGCTG  480
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Sbjct  421  TTCCCGCATCTGGAGTTCAGGAGTATTCGGGGAAACCTCAACACCCGGCTTCGGAAGCTG  480

Query  481  GACGAGCAGCAGGAGTTCAGTGCCATCATCCTGGCAACAGCTGGCCTGCAGCGCATGGGC  540
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Sbjct  481  GACGAGCAGCAGGAGTTCAGTGCCATCATCCTGGCAACAGCTGGCCTGCAGCGCATGGGC  540

Query  541  TGGCACAACCGGGTTGGGCAGATCCTGCACCCTGAGGAATGCATGTATGCTGTGGGCCAG  600
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Sbjct  541  TGGCACAACCGGGTTGGGCAGATCCTGCACCCTGAGGAATGCATGTATGCTGTGGGCCAG  600

Query  601  GGGGCCTTGGGCGTGGAAGTGCGAGCCAAGGACCAGGACATCTTGGATCTGGTGGGTGTG  660
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Sbjct  601  GGGGCCTTGGGCGTGGAAGTGCGAGCCAAGGACCAGGACATCTTGGATCTGGTGGGTGTG  660

Query  661  CTGCACGATCCCGAGACTCTGCTTCGCTGCATCGCTGAAAGGGCCTTCCTGAGGCACCTG  720
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  661  CTGCACGATCCCGAGACTCTGCTTCGCTGCATCGCTGAAAGGGCCTTCCTGAGGCACCTG  720

Query  721  GAAGGAGGCTGCAGTGTGCCAGTAGCCGTGCATACAGCTATGAAGGATGGGCAACTGTAC  780
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
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Sbjct  721   GAAGGAGGCTGCAGTGTGCCAGTAGCCGTGCATACAGCTATGAAGGATGGGCAACTGTAC  780

Query  781   CTGACTGGAGGAGTCTGGAGTCTAGACGGCTCAGATAGCATACAAGAGACCATGCAGGCT  840
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  781   CTGACTGGAGGAGTCTGGAGTCTAGACGGCTCAGATAGCATACAAGAGACCATGCAGGCT  840

Query  841   ACCATCCATGTCCCTGCCCAGCATGAAGATGGCCCTGAGGATGACCCACAGTTGGTAGGC  900
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  841   ACCATCCATGTCCCTGCCCAGCATGAAGATGGCCCTGAGGATGACCCACAGTTGGTAGGC  900

Query  901   ATCACTGCTCGTAACATTCCACGAGGGCCCCAGTTGGCTGCCCAGAACTTGGGCATCAGC  960
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  901   ATCACTGCTCGTAACATTCCACGAGGGCCCCAGTTGGCTGCCCAGAACTTGGGCATCAGC  960

Query  961   CTGGCCAACTTGTTGCTGAGCAAAGGAGCCAAAAACATCCTGGATGTTGCACGGCAATTG  1020
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  961   CTGGCCAACTTGTTGCTGAGCAAAGGAGCCAAAAACATCCTGGATGTTGCACGGCAATTG  1020

Query  1021  AACGATGCCCATTAA  1035
             |||||||||||||||
Sbjct  1021  AACGATGCCCATTAA  1035
```

**Alignment between SEQ ID NO:4 from '777 and instant SEQ ID NO:4:**

```
Query  1    CACACAGCCTACTTTCCAAGCGGAGCCATGTCTGGTAACGGCAATGCGGCTGCAACGGCG  60
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  1    CACACAGCCTACTTTCCAAGCGGAGCCATGTCTGGTAACGGCAATGCGGCTGCAACGGCG  60

Query  61   GAAGAAAACAGCCCAAAGATGAGAGTGATTCGCGTGGGTACCCGCAAGAGCCAGCTTGCT  120
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  61   GAAGAAAACAGCCCAAAGATGAGAGTGATTCGCGTGGGTACCCGCAAGAGCCAGCTTGCT  120

Query  121  CGCATACAGACGGACAGTGTGGTGGCAACATTGAAAGCCTCGTACCCTGGCCTGCAGTTT  180
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  121  CGCATACAGACGGACAGTGTGGTGGCAACATTGAAAGCCTCGTACCCTGGCCTGCAGTTT  180

Query  181  GAAATCATTGCTATGTCCACCACAGGGGACAAGATTCTTGATACTGCACTCTCTAAGATT  240
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  181  GAAATCATTGCTATGTCCACCACAGGGGACAAGATTCTTGATACTGCACTCTCTAAGATT  240

Query  241  GGAGAGAAAAGCCTGTTTACCAAGGAGCTTGAACATGCCCTGGAGAAGAATGAAGTGGAC  300
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  241  GGAGAGAAAAGCCTGTTTACCAAGGAGCTTGAACATGCCCTGGAGAAGAATGAAGTGGAC  300

Query  301  CTGGTTGTTCACTCCTTGAAGGACCTGCCCACTGTGCTTCCTCCTGGCTTCACCATCGGA  360
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  301  CTGGTTGTTCACTCCTTGAAGGACCTGCCCACTGTGCTTCCTCCTGGCTTCACCATCGGA  360

Query  361  GCCATCTGCAAGCGGGAAAACCCTCATGATGCTGTTGTCTTTCACCCAAAATTTGTTGGG  420
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  361  GCCATCTGCAAGCGGGAAAACCCTCATGATGCTGTTGTCTTTCACCCAAAATTTGTTGGG  420

Query  421  AAGACCCTAGAAACCCTGCCAGAGAAGAGTGTGGTGGGAACCAGCTCCCTGCGAAGAGCA  480
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  421  AAGACCCTAGAAACCCTGCCAGAGAAGAGTGTGGTGGGAACCAGCTCCCTGCGAAGAGCA  480

Query  481  GCCCAGCTGCAGAGAAAGTTCCCGCATCTGGAGTTCAGGAGTATTCGGGGAAACCTCAAC  540
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  481  GCCCAGCTGCAGAGAAAGTTCCCGCATCTGGAGTTCAGGAGTATTCGGGGAAACCTCAAC  540

Query  541  ACCCGGCTTCGGAAGCTGGACGAGCAGCAGGAGTTCAGTGCCATCATCCTGGCAACAGCT  600
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  541  ACCCGGCTTCGGAAGCTGGACGAGCAGCAGGAGTTCAGTGCCATCATCCTGGCAACAGCT  600

Query  601  GGCCTGCAGCGCATGGGCTGGCACAACCGGGTTGGGCAGATCCTGCACCCTGAGGAATGC  660
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  601  GGCCTGCAGCGCATGGGCTGGCACAACCGGGTTGGGCAGATCCTGCACCCTGAGGAATGC  660

Query  661  ATGTATGCTGTGGGCCAGGGGGCCTTGGGCGTGGAAGTGCGAGCCAAGGACCAGGACATC  720
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  661  ATGTATGCTGTGGGCCAGGGGGCCTTGGGCGTGGAAGTGCGAGCCAAGGACCAGGACATC  720

Query  721  TTGGATCTGGTGGGTGTGCTGCACGATCCCGAGACTCTGCTTCGCTGCATCGCTGAAAGG  780
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  721  TTGGATCTGGTGGGTGTGCTGCACGATCCCGAGACTCTGCTTCGCTGCATCGCTGAAAGG  780
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Query  781   GCCTTCCTGAGGCACCTGGAAGGAGGCTGCAGTGTGCCAGTAGCCGTGCATACAGCTATG  840
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  781   GCCTTCCTGAGGCACCTGGAAGGAGGCTGCAGTGTGCCAGTAGCCGTGCATACAGCTATG  840

Query  841   AAGGATGGGCAACTGTACCTGACTGGAGGAGTCTGGAGTCTAGACGGCTCAGATAGCATA  900
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  841   AAGGATGGGCAACTGTACCTGACTGGAGGAGTCTGGAGTCTAGACGGCTCAGATAGCATA  900

Query  901   CAAGAGACCATGCAGGCTACCATCCATGTCCCTGCCCAGCATGAAGATGGCCCTGAGGAT  960
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  901   CAAGAGACCATGCAGGCTACCATCCATGTCCCTGCCCAGCATGAAGATGGCCCTGAGGAT  960

Query  961   GACCCACAGTTGGTAGGCATCACTGCTCGTAACATTCCACGAGGGCCCCAGTTGGCTGCC  1020
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  961   GACCCACAGTTGGTAGGCATCACTGCTCGTAACATTCCACGAGGGCCCCAGTTGGCTGCC  1020

Query  1021  CAGAACTTGGGCATCAGCCTGGCCAACTTGTTGCTGAGCAAAGGAGCCAAAAACATCCTG  1080
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  1021  CAGAACTTGGGCATCAGCCTGGCCAACTTGTTGCTGAGCAAAGGAGCCAAAAACATCCTG  1080

Query  1081  GATGTTGCACGGCAATTGAACGATGCCCATTAA  1113
             ||||||||||||||||||||||||||||||||
Sbjct  1081  GATGTTGCACGGCAATTGAACGATGCCCATTAA  1113
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**Alignment of instant SEQ ID NOS: 3 and 4.**

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Query  1    ATGAGAGTGATTCGCGTGGGTACCCGCAAGAGCCAGCTTGCTCGCATACAGACGGACAGT  60
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  79   ATGAGAGTGATTCGCGTGGGTACCCGCAAGAGCCAGCTTGCTCGCATACAGACGGACAGT  138

Query  61   GTGGTGGCAACATTGAAAGCCTCGTACCCTGGCCTGCAGTTTGAAATCATTGCTATGTCC  120
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  139  GTGGTGGCAACATTGAAAGCCTCGTACCCTGGCCTGCAGTTTGAAATCATTGCTATGTCC  198

Query  121  ACCACAGGGGACAAGATTCTTGATACTGCACTCTCTAAGATTGGAGAGAAAAGCCTGTTT  180
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  199  ACCACAGGGGACAAGATTCTTGATACTGCACTCTCTAAGATTGGAGAGAAAAGCCTGTTT  258

Query  181  ACCAAGGAGCTTGAACATGCCCTGGAGAAGAATGAAGTGGACCTGGTTGTTCACTCCTTG  240
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  259  ACCAAGGAGCTTGAACATGCCCTGGAGAAGAATGAAGTGGACCTGGTTGTTCACTCCTTG  318

Query  241  AAGGACCTGCCCACTGTGCTTCCTCCTGGCTTCACCATCGGAGCCATCTGCAAGCGGGAA  300
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  319  AAGGACCTGCCCACTGTGCTTCCTCCTGGCTTCACCATCGGAGCCATCTGCAAGCGGGAA  378

Query  301  AACCCTCATGATGCTGTTGTCTTTCACCCAAAATTTGTTGGGAAGACCCTAGAAACCCTG  360
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  379  AACCCTCATGATGCTGTTGTCTTTCACCCAAAATTTGTTGGGAAGACCCTAGAAACCCTG  438

Query  361  CCAGAGAAGAGTGTGGTGGGAACCAGCTCCCTGCGAAGAGCAGCCCAGCTGCAGAGAAAG  420
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  439  CCAGAGAAGAGTGTGGTGGGAACCAGCTCCCTGCGAAGAGCAGCCCAGCTGCAGAGAAAG  498

Query  421  TTCCCGCATCTGGAGTTCAGGAGTATTCGGGGAAACCTCAACACCCGGCTTCGGAAGCTG  480
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  499  TTCCCGCATCTGGAGTTCAGGAGTATTCGGGGAAACCTCAACACCCGGCTTCGGAAGCTG  558

Query  481  GACGAGCAGCAGGAGTTCAGTGCCATCATCCTGGCAACAGCTGGCCTGCAGCGCATGGGC  540
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  559  GACGAGCAGCAGGAGTTCAGTGCCATCATCCTGGCAACAGCTGGCCTGCAGCGCATGGGC  618

Query  541  TGGCACAACCGGGTTGGGCAGATCCTGCACCCTGAGGAATGCATGTATGCTGTGGGCCAG  600
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  619  TGGCACAACCGGGTTGGGCAGATCCTGCACCCTGAGGAATGCATGTATGCTGTGGGCCAG  678

Query  601  GGGGCCTTGGGCGTGGAAGTGCGAGCCAAGGACCAGGACATCTTGGATCTGGTGGGTGTG  660
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  679  GGGGCCTTGGGCGTGGAAGTGCGAGCCAAGGACCAGGACATCTTGGATCTGGTGGGTGTG  738

Query  661  CTGCACGATCCCGAGACTCTGCTTCGCTGCATCGCTGAAAGGGCCTTCCTGAGGCACCTG  720
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  739  CTGCACGATCCCGAGACTCTGCTTCGCTGCATCGCTGAAAGGGCCTTCCTGAGGCACCTG  798

Query  721  GAAGGAGGCTGCAGTGTGCCAGTAGCCGTGCATACAGCTATGAAGGATGGGCAACTGTAC  780
           ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  799  GAAGGAGGCTGCAGTGTGCCAGTAGCCGTGCATACAGCTATGAAGGATGGGCAACTGTAC  858
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Query  781   CTGACTGGAGGAGTCTGGAGTCTAGACGGCTCAGATAGCATACAAGAGACCATGCAGGCT  840
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  859   CTGACTGGAGGAGTCTGGAGTCTAGACGGCTCAGATAGCATACAAGAGACCATGCAGGCT  918

Query  841   ACCATCCATGTCCCTGCCCAGCATGAAGATGGCCCTGAGGATGACCCACAGTTGGTAGGC  900
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  919   ACCATCCATGTCCCTGCCCAGCATGAAGATGGCCCTGAGGATGACCCACAGTTGGTAGGC  978

Query  901   ATCACTGCTCGTAACATTCCACGAGGGCCCCAGTTGGCTGCCCAGAACTTGGGCATCAGC  960
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  979   ATCACTGCTCGTAACATTCCACGAGGGCCCCAGTTGGCTGCCCAGAACTTGGGCATCAGC  1038

Query  961   CTGGCCAACTTGTTGCTGAGCAAAGGAGCCAAAAACATCCTGGATGTTGCACGGCAATTG  1020
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Sbjct  1039  CTGGCCAACTTGTTGCTGAGCAAAGGAGCCAAAAACATCCTGGATGTTGCACGGCAATTG  1098

Query  1021  AACGATGCCCATTAA  1035
             |||||||||||||||
Sbjct  1099  AACGATGCCCATTAA  1113
```